7-9-2007

Sample now for most corn nematodes

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Sample now for most corn nematodes

by Greg Tylka, Department of Plant Pathology

There are many different species of plant-parasitic nematodes that feed on corn, and the different species vary greatly in their ability to cause damage. For example, the damage threshold for spiral nematode (*Helicotylenchus*) on corn is greater than 1,000 per 100 cc (a little less than a half cup) of soil, but only one needle nematode (*Longidorus*) per 100 cc soil can be damaging.

Also, some nematodes that feed on corn are endoparasites--that is, they feed from within the root tissue. But most corn nematode species are ectoparasites, living in the soil and feeding from outside roots.

For most plant-parasitic nematodes that feed on corn, samples should be collected mid-season, when nematode numbers likely are greatest, so that the numbers can be compared to damage thresholds established for corn. The only exception would be if needle nematode damage is suspected, then samples should be collected in the spring or fall, not in the summer. Needle nematodes migrate down into the soil in the middle of summer, when soils are warmest, and they may not be recovered from mid-season soil samples.

But the needle nematode occurs only in very sandy soils (>70% sand). So unless a needle nematode problem is suspected in a sandy field, fields should be sampled to check for possible nematode damage to corn mid-season (i.e., now), not in May or June.

Soil and roots needed

A few species of nematodes known to damage corn are endoparasites that exist primarily in roots, not soil, during the growing season. So a root sample is needed in addition to soil to properly check for a nematode problem. One of the most common plant-parasitic nematodes that damage corn in Iowa is the lesion nematode (*Pratylenchus*), and the lesion nematode is an endoparasite. Another common endoparasitic nematode of corn is the lance nematode (*Hoplolaimus*). The results in the table below illustrate how damaging population densities of lance and lesion nematodes on corn would have been undiagnosed had a root sample not been submitted in addition to soil.

Number of lance and lesion nematodes recovered from soil and roots collected from a corn field in Iowa.

No. in Soil No. in Roots

Nematode	No. in Soil (per 100 cc)	No. in Roots (per g root)

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August 20, 2001

Consider nematodes when diagnosing cause of poor corn growth
June 30, 1997

lance	18	1,667
lesion	26	5,467

Endoparasitic lance nematodes (stained purple) in root. (Greg Tylka)

Following are guidelines for collecting a good sample to check for nematode damage to corn:

- Collect a soil core or small trowelful of soil from the upper 12 inches of the soil profile from the root zone of 20 or more plants within the area suspected of being damaged.
- Collect the roots from around two or three affected plants.
- Place soil and roots in a moisture-proof bag and submit for processing as soon as possible.
- Keep samples cool until they are sent for processing.
- Avoid sending samples late in the week to prevent their storage in hot conditions in transit over the weekend.
- Submitting a companion soil and root sample collected from nearby, healthy-looking corn plants often provides a helpful comparison.
- Samples can be sent to the Iowa State University Plant and Insect Diagnostic Clinic, 327 Bessey Hall, Iowa State University, Ames, IA 50011. The test for corn nematodes is called a complete nematode count.
- Samples sent to Iowa State University should be accompanied by a completed Plant Nematode Sample Submission Form (ISU Extension publication PD 32) and a check for the $30 per sample processing fee.

Collect soil cores from root zone of corn. (Greg Tylka)

Collect 12-inch-deep soil cores. (Greg Tylka)

Collect four or five root systems in addition to soil cores. (Greg Tylka)

Greg Tylka is a professor of plant pathology with extension and research responsibilities in management of plant-parasitic nematodes.

This article originally appeared on pages 215-216 of the IC-498(18) -- July 9, 2007 issue.

Updated 07/27/2007 - 11:56am